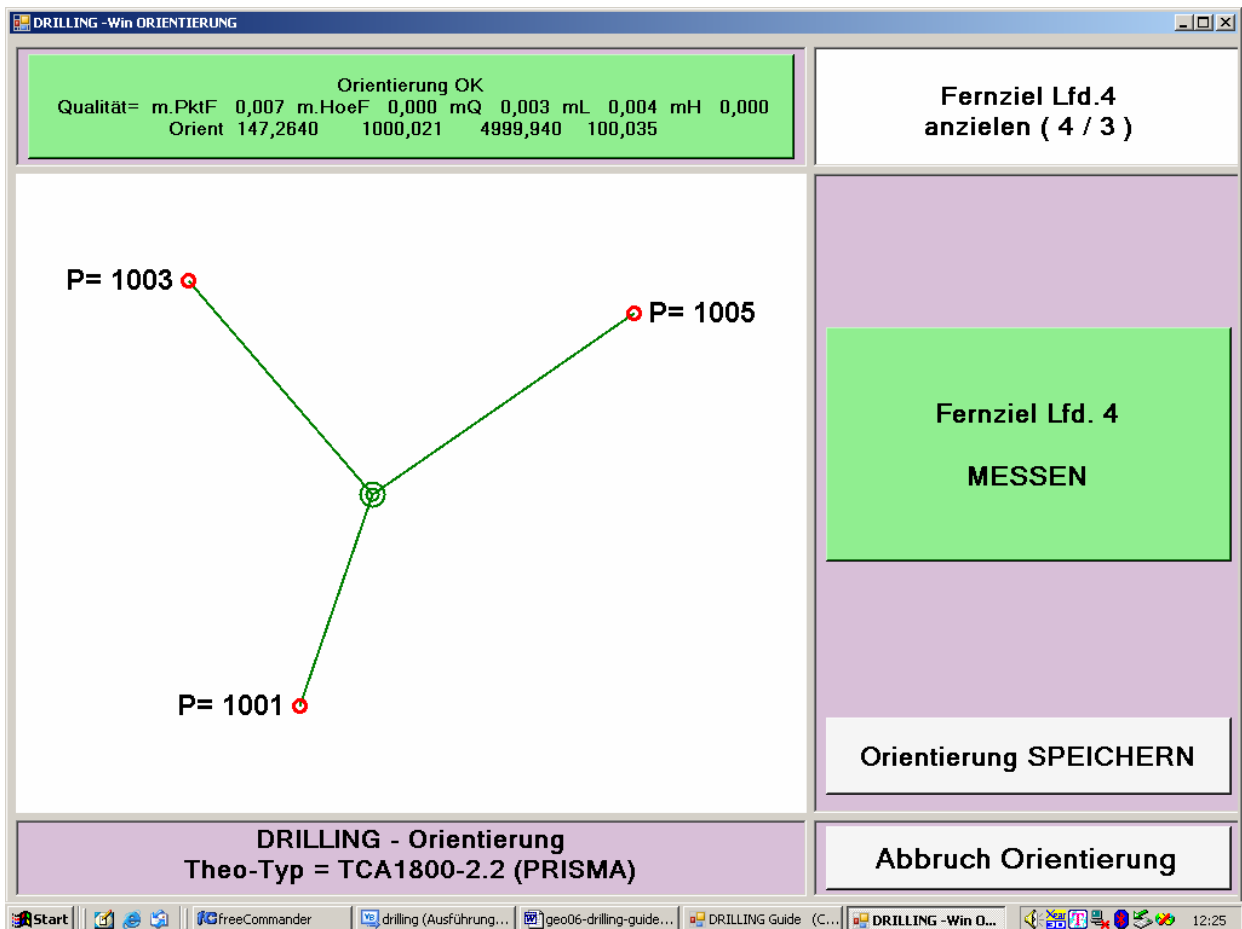


# TUNNEL - GUIDE

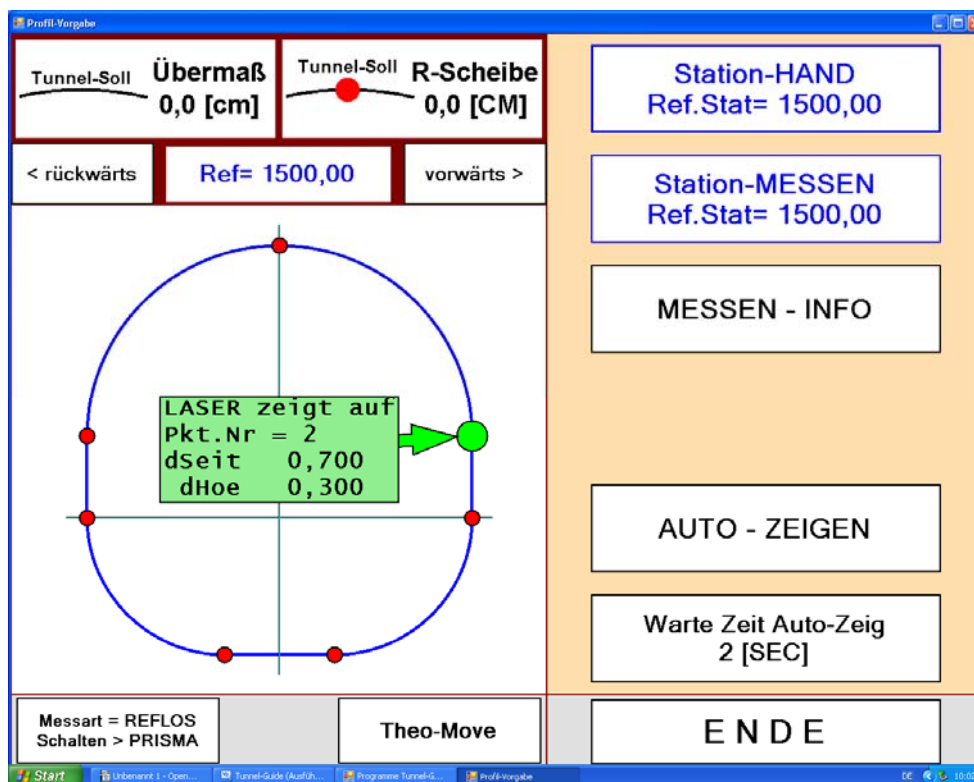
**Tunnel-Guide** is a guidance and control system for conventional tunnelling (e.g. NATM ). TUNNEL-GUIDE includes all functions of TUNNEL-CHECK and adds the functions of automatic drawing and aiming, using a servo theodolite.



**Using „free station“ - There is no need to input a point number.  
 The system will find the correct configuration out of the fix points.**  
 (patent pending)

Advantages of TUNNEL-GUIDE :

- TUNNEL-GUIDE** marks a parallel line to the designed profile at the current face with a laser.
- TUNNEL-GUIDE** helps the excavation team to erect the arch at the designed position.
- TUNNEL-GUIDE** checks cross-sections and displays the deviations in real-time.
- TUNNEL-GUIDE** checks the foundation excavation at any stage; displays the deviation from the designed profile in real time





A system consists of:

- a servo-driven theodolite with EDM and laser, online connected with an
- Industrial – PC , prisms and
- the **Tunnel-Guide** software

Short description:

The servotheodolite is normally mounted at a fixed station. The user is guided to orientation and station measurement.

After aiming to the working face with the laser point, this point will be measured , coordinated and transformed to the designed tunnel-axis.

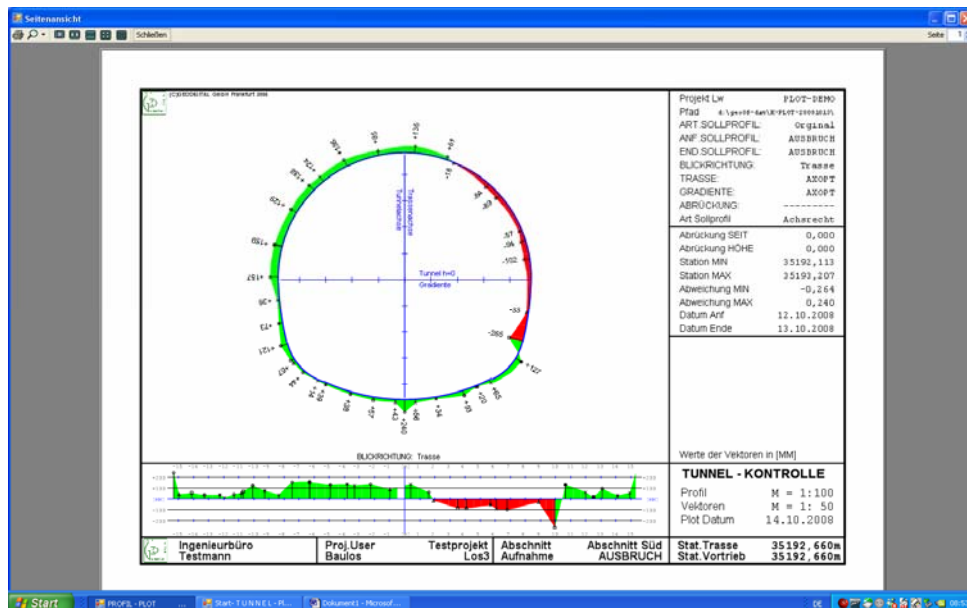
This result shows the current accurate chainage. **Tunnel-Guide** automatically finds the right design profile for that chainage or interpolates between defined different profiles. There is no input for chainage or ring number necessary. This eliminates errors caused by entering wrong numbers.

The theodolite now marks a user defined parallel profilline at the face with its laser.

Using the menu point **tunnel-arch** - the arch will be directed to its correct position and radial direction.

Changing to **tunnel-check**, the user can immediately survey the profile line. The deviation is shown in realtime.

All measured data are stored in a database and can be used for QC / QM or printed as a tunnel cross-section or an evolvent-line.



## Summary

### Tunnel-Guide basic module:

- marks the excavation line at the tunnel face
- marks defined points for the erection of arches
- checks radial direction of arches
- checks the excavated profile

### -Tunnel-Guide Options:

#### blasting scheme:

- marks drilling points at the face

#### drilling guide:

- guidance for adjusting the drilling-rig

#### auto check:

- automatic measurement of profiles



To handle the system close to the working face a wireless radio connection to the servotheodolite is available. So a small rugged pc is working as remote controll – so user interface is clearly represented.